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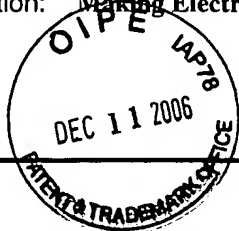
TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.
ITL1113US

In Re Application Of: **Shawn L. Lloyd, et al.**

| Application No. | Filing Date | Examiner | Customer No. | Group Art Unit | Confirmation No. |
|-----------------|----------------|-----------------|--------------|----------------|------------------|
| 10/822,572 | April 12, 2004 | James R. Harvey | 21906 | 2833 | 2638 |

Invention: **Making Electrical Connections Between a Circuit Board and an Integrated Circuit**



COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:
October 12, 2006

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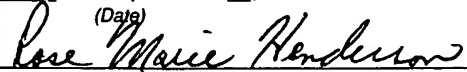
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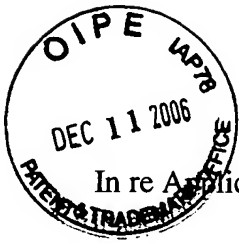


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:

Shawn L. Lloyd et al.

Serial No.: 10/822,572

Filed: April 12, 2004

For: Making Electrical Connections
Between a Circuit Board and
an Integrated Circuit

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Art Unit: 2833

Examiner: James R. Harvey

Docket: ITL.1113US
P18785

Assignee: Intel Corporation

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APPEAL BRIEF

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REAL PARTY IN INTEREST

The real party in interest is the assignee Intel Corporation.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claim 1 (Rejected).

Claim 2 (Canceled).

Claims 3-11 (Rejected).

Claim 12 (Canceled).

Claims 13-19 (Rejected).

Claims 1, 3-11, and 13-19 are rejected and are the subject of this Appeal Brief.

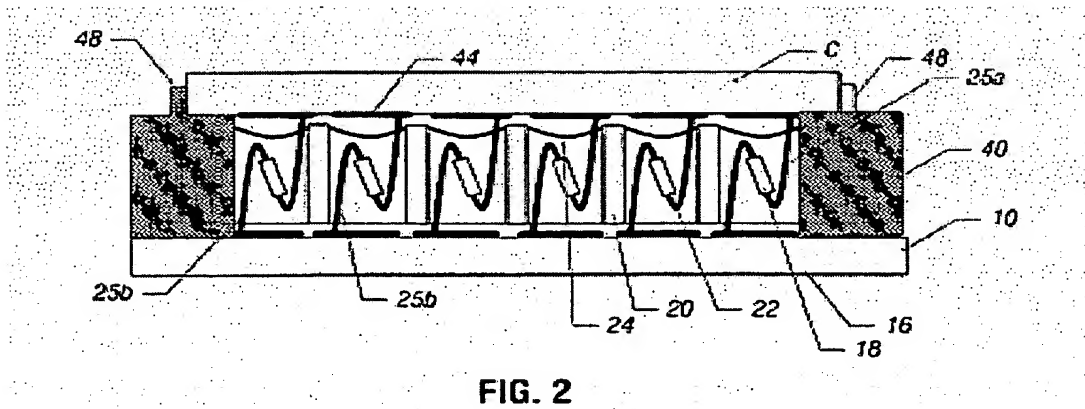
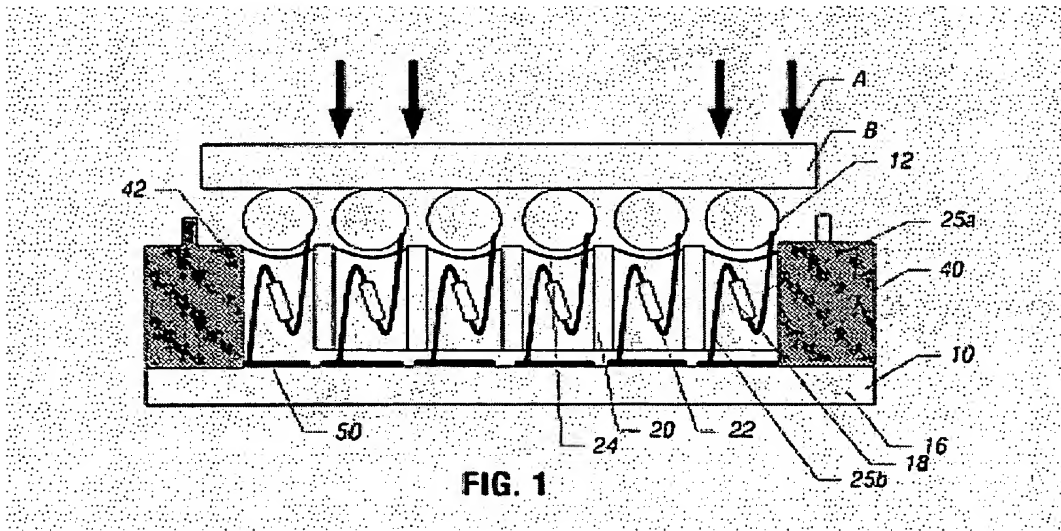
STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

In the following discussion, the independent claims are read on one of many possible embodiments without limiting the claims:

1. A socket comprising:
an upper surface with a solder ball receiving aperture (24, Figure 2) formed therein; and
an S-shaped spring contact (Figure 1, 22) arranged in said aperture, said contact adapted to make wiping electrical contact with a solder ball (Figure 1, 12) inserted into said aperture at a point spaced from the vertical center line of said solder ball (Specification at page 3, lines 1-8).



11. An electronic device comprising:
a printed circuit board (Figure 1, 10);
a socket (Figure 1, 40) coupled to said printed circuit board, said socket including a housing having an upper surface with a solder ball receiving aperture (Figure 2, 24) formed therein and an S-shaped spring contact (Figure 1, 22) aligned with said aperture to make wiping electrical contact with a solder ball inserted into said aperture at a point spaced from the vertical center line of said solder ball (Specification at page 3, lines 1-8).

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- A. Are Claims 1 and 11 Anticipated Under
35 U.S.C. § 102(b) by Rathburn?**

- B. Are Claims 1, 3-11, and 13-19 Unpatentable Under
35 U.S.C. § 103(a) Over Hornchek et al. in View of Higashi?**

ARGUMENT

A. Are Claims 1 and 11 Anticipated Under 35 U.S.C. § 102(b) by Rathburn?

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir.), *cert. denied*, 484 U.S. 827 (1987). The inquiry as to whether a reference anticipates a claim must focus on what subject matter is encompassed by the claim and what subject matter is described by the reference. As set forth by the court in *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 U.S.P.Q. 781, 789 (Fed. Cir. 1983), *cert. denied*, 465 U.S. 1026 (1984), it is only necessary for the claims to “‘read on’ something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or ‘fully met’ by it.” While all elements of the claimed invention must appear in a single reference, additional references may be used to interpret the anticipating reference and to shed light on its meaning, particularly to those skilled in the art at the relevant time. *See Studiengesellschaft Kohle m.b.H. v. Dart Indus., Inc.*, 726 F.2d 724, 726-727, 220 U.S.P.Q. 841, 842-843 (Fed. Cir. 1984).

Claim 1 calls for an S-shaped spring contact arranged in a solder ball receiving aperture. The contact is adapted to make wiping electrical contact with the solder ball inserted into the aperture at a point spaced from the vertical center line of the solder ball. The language “spaced from the vertical center line of the solder ball” calls for a wiping, off centered contact between the S-shaped spring contact and the solder ball.

Originally, the office action relied on the embodiment of Figure 2A. Plainly, it shows off centered contact, but not off centered contact with an S-shaped spring.

To remedy this deficiency, the Examiner relies on the embodiments of Figures 10A and 10B which are centered contact embodiments, meant to replace the centered contact 164 shown in Figure 8A. Thus, neither embodiment in Rathburn teaches off centered contact using an S-shaped spring. As a result, the Section 102 rejection is doomed.

It is suggested that Rathburn does teach an S-shaped spring 154b, referring to Figure 10B. While this is true, it is seen from the corresponding material in the specification and the drawing of Figure 10A that Figure 10A and the structure with the S-shaped spring 154b is meant

to replace the spring 154 in Figure 8A. There, it can be seen that the contact with the land 152 is an aligned or centered contact. Thus, the embodiment shown in Figures 10A, 10B, and 8A is inconsistent with the embodiment originally relied on in Figure 2A. Figure 2A shows an off centered arrangement and suggests using a non-S-shaped spring. Figure 8A and Figure 10B suggest creating a centered contact with an S-shaped spring. This teaches away from the claimed invention, not toward it.

The reliance on the Fulton case is misplaced. In Fulton, there were two alternative embodiments, one of which anticipated the claimed invention. Here, neither alternative embodiment anticipates the claimed invention. Picking and choosing from among the embodiments that teach away from the claimed invention is improper in a Section 102 analysis. To do so is to attempt to fashion under Section 102, a new prior art reference that was never contemplated within the prior art.

Therefore, the rejection should be reversed.

B. Are Claims 1, 3-11, and 13-19 Unpatentable Under 35 U.S.C. § 103(a) Over Hornchek et al. in View of Higashi?

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. *See In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). A *prima facie* case of obviousness is established by presenting evidence that reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed combination or other modification. *See In re Lintner*, 458 F.2d 1013, 1016, 173 U.S.P.Q. 560, 562 (CCPA 1972). Furthermore, the conclusion that the claimed subject matter is *prima facie* obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. *See In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Rejections based on § 103 must rest on a factual basis with these facts interpreted without hindsight reconstruction of the invention from the prior art. The examiner may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply

deficiencies in the factual basis for the rejection. *See In re Warner*, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173,177 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). The Federal Circuit has repeatedly cautioned against employing hindsight by using the appellant's disclosure as a blueprint to reconstruct the claimed invention from the isolated teaching of the prior art. *See, e.g., Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

With respect to the combination including Hornchek, the Examiner suggests that what is shown there are spring contacts. But, even if that were so, they are not S-shaped spring contacts. Moreover, they are incompatible with the use of S-shaped spring contacts in view of the long, thin openings provided for them. In order to provide S-shaped contacts would require substantial re-engineering of the structure. Moreover, Hornchek teaches the situation where the contacts 124 make centered alignment with the solder balls 126a. Again, teaching away from the claimed invention.

With respect to the argument based on Higashi, it is clear from Figures 5, 6, and 10 that either aligned contact is made, as in the case of Figure 5, or poking alignment is made in the case of Figure 6, without any type of wiping arrangement.

Therefore, neither reference, nor their combination, teaches the claimed invention.

The suggestion that the change of shape cannot be patentable is, of course, contrary to over 50 years of patent law. Everything is ultimately a change of shape.

The problem with using hindsight reasoning in the present case is that there is nothing in any of the references to suggest the claimed combination. Thus, the type of hindsight reasoning here is an attempt, without any guidance within the references, to reconstruct something that is not taught in any of the references.

Therefore, a *prima facie* rejection is not made out.

With respect to Figure 10 of Higashi, it is noted that it does show non-central alignment between the contact and the solder ball. But it does not show wiping contact. Instead, it shows jabbing, scratching contact, not the wiping contact claimed. The claims clearly call for both wiping contact and non-central contact. To modify the reference to do this, the poking, jabbing contact that is alleged to be S-shaped would have to hit on the right side of the solder ball off centered, not on the left side. Alternatively, a reverse S-shape could be used and hit on the side


as shown. However, as depicted, non-wiping contact is described, teaching away from the claimed invention.

* * *

Applicants respectfully request that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

Date: December 6, 2006



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CLAIMS APPENDIX

The claims on appeal are:

1. A socket comprising:
an upper surface with a solder ball receiving aperture formed therein; and
an S-shaped spring contact arranged in said aperture, said contact adapted to make wiping electrical contact with a solder ball inserted into said aperture at a point spaced from the vertical center line of said solder ball.
3. The socket of claim 1 wherein said spring contact is adapted to make wiping electrical contact with lands.
4. The socket of claim 1 wherein said S-shaped spring contacts include opposed contact arms, one of which extends upwardly and the other which extends downwardly.
5. The socket of claim 1 wherein socket includes a body, said body having a plurality of solder ball receiving apertures formed therein.
6. The socket of claim 5 including an alignment feature extending upwardly from said body to align a land grid array package with said socket.
7. The socket of claim 1 wherein said spring contact includes an upwardly extending arm to make contact with an integrated circuit package and a downwardly extending arm to make contact with an underlying circuit board.
8. The socket of claim 1 wherein said socket includes a body including an upwardly extending protrusion, said protrusion having a height less than the height of a solder ball for a ball grid array package.
9. The socket of claim 6 wherein said alignment feature is L-shaped.

10. The socket of claim 9 including two L-shaped alignment features opposed diagonally from one another on said socket.

11. An electronic device comprising:
a printed circuit board;
a socket coupled to said printed circuit board, said socket including a housing having an upper surface with a solder ball receiving aperture formed therein and an S-shaped spring contact aligned with said aperture to make wiping electrical contact with a solder ball inserted into said aperture at a point spaced from the vertical center line of said solder ball.

13. The device of claim 12 wherein said spring contact includes opposed contact arms, one of which extends upwardly and the other which extends downwardly to contact said printed circuit board.

14. The device of claim 13 wherein said printed circuit board has a land engaged by said spring contact.

15. The device of claim 11 wherein said housing includes a protrusion on its upper surface to align a land grid array package with said housing.

16. The device of claim 15 wherein said protrusion is L-shaped.

17. The device of claim 16 including two L-shaped protrusions opposed diagonally from one another on said housing.

18. The device of claim 11 including a ball grid array package engaged on said socket housing.

19. The device of claim 11 including a land grid array package engaged on said socket housing.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None